

GEOHERMAL WELL PERMIT CHECK-LIST

13-183-65 Applications for permit to drill, modify use, or abandon well; permits.

Prior to above activity, the operator shall have on file or submit to DLNR the following, as outlined in the Administrative Rules.

Developer: FGV

Well Designation: K2-4 (Geothermal)

Intended use: Injection Well

✓ on file, but requesting resubmittal in package form.

✓ (01) Name, Signature and Address of the applicant

✓ (02) Owner of Mining Rights

✓ (03) Land Owner

✓ (04) Proposed Well Designation

Requested (05) Plot Plan showing (TMK) Site Elevation and Well Location, in reference to property boundaries

✓ (06) State Geothermal Mining Lease Number

✓ (07) Survey of the Well by Hawaii licensed surveyor

Ne (08) Statement of Purpose and Extent of Proposed Work

Ne (09) Estimate of Depths between which discovery, production, injection, or plugging will be attempted

Submitted (10) Detailed Description of Proposed Drilling and Casing Program

Ne (11) Figure accurately showing the proposed work and vertical section of the well.

✓ (12) Statement by Applicant agreeing to file an appropriate BOND within ten days after permit approval

✓ (13) Statement by Applicant to perform the work and thereafter operate and maintain the well in accordance with Title 13, Chapter 183, and all other federal, state and county requirements.

need the following

- Figure showing location of well on USGS top quad.
- Item (08)
- Item (09)
- Item (11)

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

March 17, 1992

Mr. Maurice Richard
Vice President
Puna Geothermal Venture
P.O. Box 1337
Hilo, Hawaii 96721-1337

Dear Mr. Richard:

Subject: Puna Geothermal Venture
Application for Permit to Drill KS-4

Upon review of Puna Geothermal Venture's application for permit to drill KS-4 , as an injection well, dated March 5, 1992, the Department of Land and Natural Resources (Department) needs the following information before an approval of permit can be issued:

- 1) Figure showing location of KS-4 on a USGS topographic quadrangle for elevation puposes.

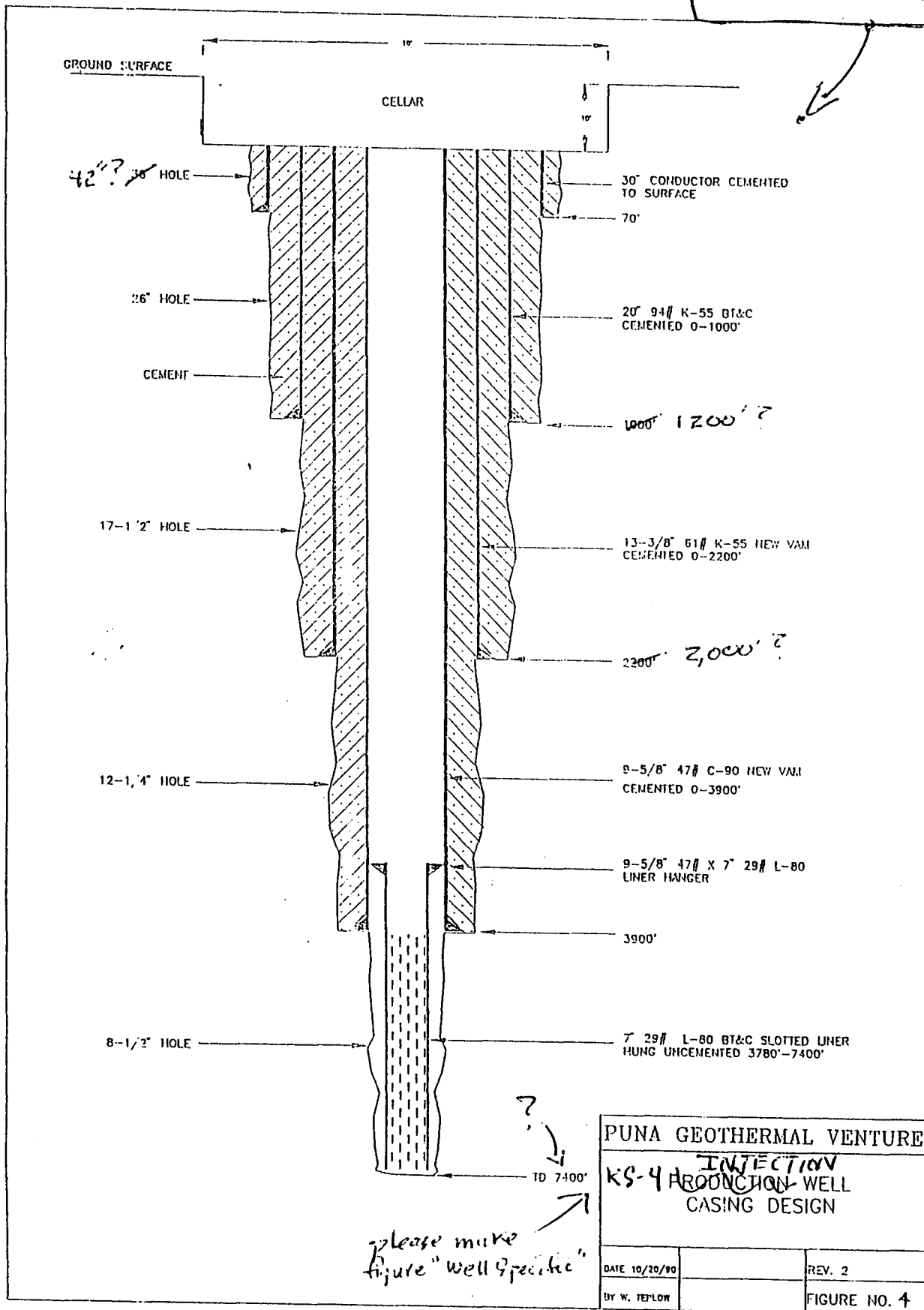
Reason: The department needs a means to verify the reported well elevation. A survey plot showing the elevation of the well by a Hawaii licensed surveyor would also suffice.

- 2) Figure accurately showing the proposed work and vertical section of KS-4 injection well.

Reason: A figure for KS-4 as a production well is on file, but a figure for KS-4 as an injection well is needed. Note: Drilling Procedure for injection well KS-4 is identical to procedure for production wells KS-9 and KS-11. Is this a mistake ? →

- 3) Figures for the injection well celler, rig layout, BOPE configuration and wellhead configuration (revised versions if applicable).

NOTE:
All depths measured
from top of KB = 20'±
above cellar floor?



- 4) TMK figure that is legible.

Reason: For the purpose of permit approval expedience, it would be helpful not to have to refer to a separate map of different scale for TMK verification.

- 5) Statement of purpose and extent of work for injection well.

Reason: This statement is on file for KS-4 as a production well, but not for KS-4 as an injection well.

KS-4 DRILLING PROCEDURES-INJECTION WELL

- 6) Page 7, number 47: Statement of estimated depth at which injection will be attempted is 7400 ft bgs, but production wells targeted for 7400 ft. bgs are about 500 ft. away on adjacent well pad A. Shouldn't TVD for injection wells be deeper than 7400 ft. bgs to ensure that geothermal fluid crossover does not occur ?
- 7) Page 7, number 47: Is written, "or until sufficient production is encountered"; however, this needs to reflect an injection well application.
- 8) Page 2, number 1.5.: Is written, "Read and understand all parts of the Plan of Operations..", but is requested to be written as follows: "Read, understand and comply with all parts of the Plan of Operations that pertain to drilling.
- 9) Drilling Procedures for KS-4 Injection Well are identical to KS-9 and KS-11 Production Wells. Shouldn't they be different ?
- 10) Included is a mark-up diagram of what Figure No. 4 should look like. The question marks are there because there is uncertainty concerning the Drilling Procedures submitted (production or injection ?). Please make each diagram "well specific" and include a box stating the point from which the listed casing depths are measured from.
- 11) Finally, are the "Catch ____ft. lithology samples", core samples or grab samples from drill cuttings ? I would like a detailed description of PGV's sample logging procedure.

Please submit the above information in the packaged format used for PGV's Application for Permit to Drill Geothermal Well Kapoho State 8, dated February 3, 1992. This will help facilitate the Department's permit approval process by making each application a file within itself.

Also, in each cover letter pertaining to an application of permit, please include a short description of the status of drilling activities when they ceased; i.e. On March 16, 1992, drilling of KS-X was halted at 1500 feet below ground surface due to ...(state cause). If drilling on a particular well was never started, please state so. This would clear up any uncertainties the Department may have concerning the current status of a particular well when applying for a permit.

If there are any questions regarding these requests, please contact me at 587-0269.

Sincerely,

Jonathan Florez
DLNR Geologist

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DEPARTMENT OF LAND AND NATURAL RESOURCES
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